What is claimed is:

1.   A method for servicing a request for information from a device with limited network, memory, and display resources, the method comprising:

receiving a request for a page of information from a client device;

retrieving the requested page;

identifying points within the page at which the page may be divided into sub-pages;

separating the page at the identified points into multiple sub-pages;

determining if each of the multiple sub-pages may be used by the client device;

linking the multiple sub-pages; and

transferring individually the multiple sub-pages to the client device.

2.   The method of claim 1 wherein separating the page at the identified points comprises:

selecting at least one of the identified points; and

dividing the page at the at least one selected point to create multiple sub-pages.

3.   The method of claim 1 wherein:

the points within the page at which the page may be divided into sub-pages define atomic pieces of the page that may not be further divided; and

separating the page at the identified points into multiple sub-pages comprises:

dividing the page into atomic pieces at the identified points; and

combining the atomic pieces to construct the multiple sub-pages.

4.   The method of claim 3 wherein the identified points are defined by elements of a language in which the information is represented, and wherein the elements define the atomic pieces of the page.

5.   The method of claim 3 wherein dividing the page into atomic pieces at the identified points comprises:

identifying atomic pieces of the page;

identifying structures within the page that include the atomic pieces;

coupling descriptions of the structures to the atomic pieces; and

adding the coupling of the atomic pieces and the corresponding descriptions of the structures to a set of atomic pieces of the page.

6. The method of claim 3 wherein combining the atomic pieces to construct the multiple sub-pages comprises:

creating a sub-page of the multiple sub-pages, the sub-page having a weight that is initially zero;

identifying a single atomic piece;

determining where in the sub-page the single atomic piece may be added;

determining whether the single atomic piece may be added to the sub-page;

adding the single atomic piece to the sub-page; and

updating the weight of the sub-page based on the addition of the single atomic piece to the sub-page.

7. The method of claim 6 wherein determining whether the single atomic piece may be added to the sub-page comprises determining if the weight of the sub-page with the single atomic piece added is less than or equal to a maximum allowable weight for each of the multiple sub-pages.

8. The method of claim 7 wherein determining if the weight of the sub-page with the single atomic piece added is less than or equal to a maximum allowable weight for each of the multiple sub-pages comprises determining if a size in memory of the sub-page with the single atomic piece added is less than or equal to a maximum allowable size in memory for each of the multiple sub-pages.

9. The method of claim 7 wherein determining if the weight of the sub-page with the single atomic piece added is less than or equal to a maximum allowable weight for each of the multiple sub-pages comprises determining if a display space used by the sub-page with the single atomic piece added is less than or equal to a maximum allowable display space used by each of the multiple sub-pages.

10.   The method of claim 7 wherein determining if the weight of the sub-page with the single atomic piece added is less than or equal to a maximum allowable weight for each of the multiple sub-pages comprises determining if a network data unit size required for the sub-page with the single atomic piece added is less than or equal to a maximum allowable network data unit size required for each of the multiple sub-pages.

11.   The method of claim 7 wherein determining if the weight of the sub-page with the single atomic piece added is less than or equal to a maximum allowable weight for each of the multiple sub-pages comprises determining if a network latency for the sub-page with the single atomic piece added is less than or equal to a maximum allowable network latency for each of the multiple sub-pages.

12.   The method of claim 7 wherein determining if the weight of the sub-page with the single atomic piece added is less than or equal to a maximum allowable weight for each of the multiple sub-pages comprises determining if input devices required by the sub-page with the single atomic piece added are available on the client device.

13.   The method of claim 1 wherein determining if each of the multiple sub-pages may be used by the client device comprises:
        translating each of the multiple sub-pages into a language used to display the multiple sub-pages;
        calculating a weight of each of the multiple sub-pages after translation; and
        comparing each of the calculated weights to a maximum allowable weight.

14.   The method of claim 13 wherein calculating the weight of each of the multiple sub-pages after translation comprises calculating a size in memory of each of the multiple sub-pages after translation.

15.   The method of claim 13 wherein calculating the weight of each of the multiple sub-pages after translation comprises calculating a display space used by each of the multiple sub-pages after translation.

16.   The method of claim 13 wherein calculating the weight of each of the multiple sub-pages after translation comprises calculating a network data unit size required for each of the multiple sub-pages after translation.

17.   The method of claim 13 wherein calculating the weight of each of the multiple sub-pages after translation comprises calculating a network latency for each of the multiple sub-pages after translation.

18.   The method of claim 13 wherein:

calculating the weight of each of the multiple sub-pages after translation comprises identifying input devices required by each of the multiple sub-pages after translation; and

comparing each of the calculated weights to a maximum allowable weight comprises determining if the input devices required by each of the multiple sub-pages after translation are available on the client device.

19.   The method of claim 1 wherein determining if each of the multiple sub-pages may be used by the client device comprises:

estimating a weight of each of the multiple sub-pages; and

comparing each of the estimated weights to a maximum allowable weight;

20.   The method of claim 19 wherein estimating the weight of each of the multiple sub-pages comprises estimating a size in memory of each of the multiple sub-pages.

21.   The method of claim 19 wherein estimating the weight of each of the multiple sub-pages comprises estimating a display space used by each of the multiple sub-pages.

22.   The method of claim 19 wherein estimating the weight of each of the multiple sub-pages comprises estimating a network data unit size required for each of the multiple sub-pages.

23.   The method of claim 19 wherein estimating the weight of each of the multiple sub-pages comprises estimating a network latency for each of the multiple sub-pages.

24.   The method of claim 19 wherein:

estimating the weight of each of the multiple sub-pages comprises estimating input devices required by each of the multiple sub-pages; and

comparing each of the estimated weights to a maximum allowable weight comprises determining if the input devices required by each of the multiple sub-pages are available on the client device.

25.   The method of claim 19 further comprising enabling estimation of the weight each of the multiple sub-pages.

26.   The method of claim 25 wherein enabling estimation of the weight of each of the multiple sub-pages comprises:

generating random pieces of information of varying sizes;

calculating a weight of each of the random pieces of information;

translating the random pieces of information into a language used to display information on the client device;

calculating a weight of each of the random pieces of information after translation; and

performing a linear regression between the calculated weights of the random pieces of information and the corresponding calculated weights of the random pieces of information after translation.

27.   The method of claim 26 wherein calculating the weight of each of the random pieces of information comprises calculating a size in memory of each of the random pieces of information.

28.   The method of claim 26 wherein calculating the weight of each of the random pieces of information comprises calculating a display space used by each of the random pieces of information.

29.   The method of claim 26 wherein calculating the weight of each of the random pieces of information comprises calculating a network data unit size required for each of the random pieces of information.

30.   The method of claim 26 wherein calculating the weight of each of the random pieces of information comprises calculating a network latency for each of the random pieces of information.

31.   The method of claim 26 wherein calculating the weight of each of the random pieces of information comprises identifying input devices required by each of the random pieces of information.

32.   The method of claim 26 wherein estimating a weight of each of the multiple sub-pages comprises using the linear regression performed between the calculated weights of the random pieces of information and the corresponding calculated weights of the random pieces of information after translation to estimate the weight of each of the multiple sub-pages after translation into a language used to display the multiple sub-pages based on a weight of each of the multiple sub-pages before translation into the language.

33.   The method of claim 1 wherein identifying points within the page at which the page may be divided into multiple sub-pages includes inserting fragmentation points into the page at which the page may be divided into multiple sub-pages.

34.   The method of claim 33 wherein:
the fragmentation points include a level attribute; and
the page is divided at fragmentation points with lower values for the level attribute before the page is divided at fragmentation points with higher values for the level attribute.

35.   The method of claim 1 wherein identifying points within the page at which the page may be divided into multiple sub-pages comprises:
identifying an initial fragmentation point within the page;
identifying a fragment size associated with the initial fragmentation point; and

creating additional fragmentation points at integer multiples of the fragment size from the initial fragmentation point.

36.   The method of claim 1 wherein identifying points within the page at which the page may be divided into sub-pages comprises inserting markers around atomic pieces of the page.

37.   The method of claim 1 further comprising identifying network, memory, and display requirements of the client device for use in determining if each of the multiple sub-pages may be used by the client device.

38.   The method of claim 37 wherein identifying network, memory, and display requirements of the client device comprises:

receiving an identification of the client device; and

retrieving an indication of the network, memory, and display requirements from a database based on the received identification.

39.   The method of claim 37 wherein identifying network, memory, and display requirements of the client device comprises receiving an indication of network, memory, and display requirements of the client device from the client device.

40.   A method for fragmenting a page for a device that is unable to receive or display the page as a whole, the method comprising:

identifying a page that is to be sent to a client device;

dividing the page into atomic pieces;

combining the atomic pieces to construct multiple sub-pages;

estimating a weight of each of the multiple sub-pages;

comparing the weight of each of the multiple sub-pages to a maximum allowable weight; and

transferring individually the multiple sub-pages to the client device.

41. The method of claim 40 wherein dividing the page into the atomic pieces comprises:

identifying atomic pieces of the page;

identifying structures within the page that include the atomic pieces;

coupling descriptions of the structures to the atomic pieces; and

adding the coupling of the atomic pieces and the corresponding descriptions of the structures to a set of atomic pieces of the page.

42. The method of claim 40 wherein combining the atomic pieces to construct multiple sub-pages comprises:

creating a sub-page of the multiple sub-pages, the sub-page having a weight that is initially zero;

identifying a single atomic piece;

determining whether the single atomic piece may be added to the sub-page;

determining where in the sub-page the single atomic piece may be added;

adding the single atomic piece to the sub-page; and

updating the weight of the sub-page based on the addition of the single atomic piece to the sub-page.

43. The method of claim 42 wherein determining whether the single atomic piece may be added to the sub-page comprises determining if the weight of the sub-page with the single atomic piece added is less than or equal to a maximum allowable weight for each of the multiple sub-pages.

44. The method of claim 40 further comprising enabling estimation of the weight of each of the multiple sub-pages.

45. The method of claim 44 wherein enabling estimation of the weight of each of the multiple sub-pages comprises:

generating random pieces of information of varying sizes;

calculating a weight of each of the random pieces of information;

translating the random pieces of information into a language used to display information on the client device;

calculating a weight of each of the random pieces of information after translation; and

performing a linear regression between the calculated weights of the random pieces of information and the corresponding calculated weights of the random pieces of information after translation.

46.   The method of claim 45 wherein estimating the weight of each of the multiple sub-pages comprises using the linear regression performed between the calculated weights of the random pieces of information and the corresponding calculated weights of the random pieces of information after translation to estimate the weight of each of the multiple sub-pages after translation into a language used to display the multiple sub-pages based on a weight of each of the multiple sub-pages before translation into the language.

47.   The method of claim 40 further comprising identifying the maximum allowable weight based on network, memory, and display requirements of the client device.

48.   A method for fragmenting a page for a device that is unable to receive or display the page as a whole, the method comprising:

identifying a page that is to be sent to a client device;

dividing the page into atomic pieces;

combining the atomic pieces to construct multiple sub-pages;

translating each of the multiple sub-pages into a language used to display the multiple sub-pages;

calculating a weight of each of the translated sub-pages;

comparing the weight of each of the translated sub-pages to a maximum allowable weight; and

transferring individually the translated sub-pages to the client device.

49.   The method of claim 48 wherein dividing the page into the atomic pieces comprises:

identifying atomic pieces of the page;

identifying structures within the page that include the atomic pieces;

coupling descriptions of the structures to the atomic pieces; and

adding the coupling of the atomic pieces and the corresponding descriptions of the structures to a set of atomic pieces of the page.

50.   The method of claim 48 wherein combining the atomic pieces to construct multiple sub-pages comprises:

creating a sub-page of the multiple sub-pages, the sub-page having a weight that is initially zero;

identifying a single atomic piece;

determining whether the single atomic piece may be added to the sub-page;

determining where in the sub-page the single atomic piece may be added;

adding the single atomic piece to the sub-page; and

updating the weight of the sub-page based on the addition of the single atomic piece to the sub-page.

51.   The method of claim 50 wherein determining whether the single atomic piece may be added to the sub-page comprises determining if the weight of the sub-page with the single atomic piece added is less than or equal to a maximum allowable weight for each of the multiple sub-pages.

52.   The method of claim 48 further comprising identifying the maximum allowable weight based on network, memory, and display requirements of the client device.

53.   A method for fragmenting a page for a device that is unable to receive or display the page as a whole, the method comprising:

identifying a page that is to be sent to a client device;

identifying fragmentation points within the page at which the page may be divided into sub-pages;

dividing the page at at least one of the identified fragmentation points to create multiple sub-pages;

estimating a weight of each of the multiple sub-pages;

comparing the weight of each of the multiple sub-pages to a maximum allowable weight; and

transferring individually the multiple sub-pages to the client device.

54.   The method of claim 53 wherein:

the fragmentation points include a level attribute; and

dividing the page at at least one of the identified fragmentation points comprises dividing the page at fragmentation points with a lower value for the level attribute before dividing the page at fragmentation points with a higher value for the level attribute.

55.   The method of claim 53 wherein identifying fragmentation points within the page comprises:

identifying an initial fragmentation point within the page;

identifying a fragment size associated with the initial fragmentation point; and

creating additional fragmentation points at integer multiples of the fragment size from the initial fragmentation point.

56.   The method of claim 53 further comprising enabling estimation of the weight of each of the multiple sub-pages.

57.   The method of claim 56 wherein enabling estimation of the weight of each of the sub-pages comprises:

generating random pieces of information of varying sizes;

calculating a size of each of the random pieces of information;

translating the random pieces of information into a language used to display information on the client device;

calculating a weight of each of the random pieces of information after translation; and

performing a linear regression between the calculated weights of the random pieces of information and the corresponding calculated weights of the random pieces of information after translation.

58.   The method of claim 57 wherein estimating the weight of each of the multiple sub-pages comprises using the linear regression performed between the calculated weights of the random pieces of information and the corresponding calculated weights of the random pieces of information after translation to estimate the weight of each of the multiple sub-pages after translation into a language used to display the multiple sub-pages based on a weight of each of the multiple sub-pages before translation into the language.

59.   The method of claim 53 further comprising identifying the maximum allowable weight based on network, memory, and display requirements of the client device.

60.   A method for fragmenting a page for a device that is unable to receive or display the page as a whole, the method comprising:
        identifying a page that is to be sent to a client device;
        identifying fragmentation points within the page at which the page may be divided into sub-pages;
        dividing the page at at least one of the identified fragmentation points to create multiple sub-pages;
        translating each of the multiple sub-pages into a language used to display the multiple sub-pages on the client device;
        calculating a weight of each of the translated sub-pages;
        comparing the weight of each of the translated sub-pages to a maximum allowable weight; and
        transferring individually the translated sub-pages to the client device for display.

61.   The method of claim 60 wherein:
        the fragmentation points include a level attribute; and
        dividing the page at at least one of the identified fragmentation points comprises dividing the page at a fragmentation point with a lower value for the level attribute before dividing the page at a fragmentation point with a higher value for the level attribute.

62.   The method of claim 60 wherein identifying fragmentation points within the page comprises:

identifying an initial fragmentation point within the page;

identifying a fragment size associated with the initial fragmentation point; and

creating additional fragmentation points at integer multiples of the fragment size from the initial fragmentation point.

63.   The method of claim 60 further comprising identifying the maximum allowable weight based on network, memory, and display requirements of the client device.